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(54) PROCESS FOR THE PRODUCTION OF A FLOOR STRIP

VERFAHREN ZUR HERSTELLUNG EINES FUSSBODENSTREIFENS

PROCEDE DE PRODUCTION D'UNE LAME DE REVETEMENT DE SOL

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Description

[0001] The present invention relates to a process for the production of a floor strip such as a dilatation profile, a transition profile or a finishing profile.

[0002] US-4 198 455 relates to a method of forming a trim and molding strip comprising a core of plywood covered by an overlay film of a thermoplastic flexible decorative material. The rearward surface of the core is provided with one or more longitudinally extending V-shaped grooves, the angle formed within each groove being substantially 90 degrees. The groove extends inwardly through the core but terminates at the overlay film which functions as a hinge to facilitate bending of the molding strip into and around corners.

[0003] It is previously known to produce floor strips such as metal strips, wood veneer coated strips and strips of homogeneous wood.

[0004] There is a strong desire to bring about a floor strip with the same pattern as on a floor of thermosetting laminate. During the last years these floors have become very usual. For instance they are made with wood pattern, marble pattern and phantasy pattern. Possibly you can use a homogeneous wood strip or a wood veneer coated strip for a few of the wood patterned floors. Previously known strips do not go well together with all the other floor patterns.

[0005] In addition the purpose of the present invention is to provide a floor strip with improved abrasion resistance.

[0006] According to the present invention it has quite surprisingly been possible to meet the above needs and bring about a process for the production of floor strips such as a dilatation profile, a transition profile or a finishing profile. The process comprises glueing, preferably under heat and pressure a thin decorative thermosetting laminate of postforming quality having an abrasion resistance measured as IP-value >3000 revolutions, preferably >6000 revolutions, on a longitudinal carrier, which has a rectangular cross-section and at least two opposite rounded-off edges. The postforming laminate is glued in one piece on the upper side and two long sides of the carrier via the rounded-off edges, whereupon one or more floor profiles having the same or different cross-section is machined from the laminate coated carrier.

[0007] According to one embodiment the carrier can be provided with a rectangular cross-section with three rounded-off edges. The carrier preferably consists of a fibre board or a particle board.

[0008] One great advantage of the process for the production according to the invention is that it is very rational. From the same body, the laminate clad carrier, several profiles with varying shape can be machined. Usually a milling machine is used for machining the different kinds of profiles from the laminate coated carrier.

[0009] Preferably the carrier is water resistant. At a preferred embodiment the carrier consists of a high density fibre board made of fine fibres.

[0010] At a preferred embodiment the postforming laminate is glued in one piece on three of the four longitudinal sides of the carrier, preferably on the upper side and two long sides via the rounded-off edges. Advantageously, a heat and moisture resistant glue is used at the glueing. Preferably the glueing is carried out under heat and pressure. For instance the pressure can be regulated by means of rollers which press the laminate against the carrier. The temperature can for instance be regulated with heating nozzles which can give an even current of warm air.

[0011] At another embodiment the carrier can be provided with a rectangular cross-section and three rounded-off edges. The postforming laminate is then glued in one piece on all four sides of the carrier via the rounded-off edges.

[0012] Suitably the postforming laminate consists of at least one monochromatic or patterned paper sheet impregnated with a thermosetting resin, preferably melamine-formaldehyde resin and preferably one or more sheets for instance of parchment, vulcanized fibres or glass fibres. The last mentioned sheets are preferably not impregnated with any thermosetting resin, but the thermosetting resin from the sheets situated above will enter these sheets at the laminating step, where all sheets are bonded together.

[0013] Generally the term postforming laminate means a laminate which is so flexible that it can be formed at least to a certain extent after the production thereof. Ordinary qualities of thermosetting decorative laminates are rather brittle and cannot be regarded as postforming laminates.

[0014] Usually the postforming laminate includes at least one uppermost transparent paper sheet made of α-cellulose and impregnated with a thermosetting resin, preferably melamine-formaldehyde resin. This so-called overlay is intended to protect an underlying decor sheet from abrasion.

[0015] Often at least one of the paper sheets of the postforming laminate impregnated with thermosetting resin, preferably the uppermost one is coated with hard particles for instance silica, aluminium oxide and/or silicon carbide with an average particle size of about 1-80 µm, preferably about 5-60 µm evenly distributed over the surface of the paper sheet.

[0016] In a preferred embodiment the hard particles are applied on the resin impregnated paper surface before the resin has been dried.

[0017] The hard particles improve the abrasion resistance of the laminate. Hard particles are used in the same way at the production of laminates which are subject to a hard wear such as flooring laminates.

[0018] The abrasion resistance of the postforming laminates are tested according to the European standard EN 438-2/6:1991. According to this standard the abrasion of the decor sheet of the finished laminate to the so-called IP-point (initial point) is measured, where

the starting abrasion takes place.

[0019] The IP-value suitably lies within the interval 3000-20000, preferably 3000-10000 revolutions.

[0020] Thus, the manufacturing process according to the invention makes it possible to produce laminate clad profiles with the same surface pattern and about the same abrasion resistance as the laminate floorings they are intended to go together with.

[0021] Of course the pattern of the profiles can also be adapted to other flooring materials than laminate floorings, such as parquette floorings and soft plastic floorings.

[0022] The present invention will be explained further in connection with the embodiment example below and the enclosed figures of which figure 1 shows a postforming laminate 1 glued to a longitudinal carrier 2. Figure 2 shows a dilatation profile 3 with a postforming laminate 1 glued thereto, while figure 3 illustrates a finishing profile 4 with a postforming laminate 1 glued thereto. Finally figure 4 shows a transition profile 5 with a postforming laminate 1 glued thereto.

[0023] On the figures the thickness of the postforming laminate 1 has been magnified as compared to the size of the carrier 2 and the profiles 3-5 respectively to better illustrate that a postforming laminate 1 is glued to the carrier 2 and the profiles 3-5 respectively.

[0024] Of course the figures 1-4 only show one embodiment of the carrier 2 and the profiles 3-5 respectively which can be produced according to the invention. Various other designs are possible.

Example

[0025] A roll of transparent so-called overlay paper of α-cellulose with a surface weight of 25 g/m^2 was impregnated with an aqueous solution of melamine-formaldehyde resin to a resin content of 70 percent by weight calculated on dry impregnated paper. Immediately after the impregnation, aluminium oxide particles with an average particle size of 50 µm were applied to the upper side of the paper in an amount of 7 g/m^2 by means of a doctor-roll placed above the paper web.

[0026] Thus, the hard aluminium particles were applied in the melamine-formaldehyde resin which had not been dried yet.

[0027] The impregnated paper web was then fed continuously into a heating oven, where the solvent was evaporated. At the same time the resin was partially cured to so-called B-stage. Thereby the aluminium oxide particles were enclosed in the resin layer and arcordingly concentrated to the surface of the product obtained which is usually called prepreg. The prepreg web obtained was then rolled again.

[0028] A roll of conventional nontransparent so-called decor paper with a decor pattern printed thereon and having a surface weight of 80 g/m^2 was treated in the same way as the overlay paper except for the fact that no aluminium oxide particles were applied and that the resin content was 50 percent by weight calculated on dry impregnated paper.

[0029] A roll of unimpregnated parchment with a surface weight of 120 g/m^2 was used at the production of the postforming laminate.

[0030] The two prepreg webs impregnated with melamine-formaldehyde resin and the unimpregnated parchment web were pressed between two press bands of a continuous laminating press to a decorative postforming laminate.

[0031] At the pressing a prepreg web of α-cellulose was placed on top with the side with the hard particles directed upwards. Underneath followed a prepreg web of decor paper and at the bottom a web of parchment. The prepreg webs and the parchment web were pressed together at a pressure of 35 kp/cm^2 and at a temperature of 170°C.

[0032] The decorative postforming laminate obtained was cut with roller knives to strips of suitable length and width.

[0033] A longitudinal carrier 2 with a rectangular cross-section and two opposite rounded-off edges according to figure 1 was machined from a fibre board by means of a milling machine. The fibre board was a water resistant board of so-called MDF-quality (medium density fibre board quality) of high density made of finely divided fibres.

[0034] A strip of postforming laminate 1 was glued under heat and pressure to the longitudinal carrier 2 with a heat and moisture resistant glue. The pressure was regulated with rolls which pressed the laminate against the carrier and the temperature was regulated with heating nozzles which blew an even current of warm air.

[0035] A dilation profile 3 according to figure 2 was machined from the laminate clad carrier by milling.

[0036] Instead two finishing profiles 4 according to figure 3 or one transition profile 5 according to figure 4 can be produced from the same carrier. This results in a rational and cost-saving production.

[0037] The abrasion resistance of the postforming laminate obtained was measured. Then a value for the IP-point amounting to 7000 revolutions was obtained.

[0038] The present invention is not limited to the embodiments disclosed, since these can be modified in different ways within the scope of the present invention as defined in the claims.

Claims

1. Process for the production of a floor strip such as a dilatation profile (3), a transition profile (5) or a finishing profile (4), which comprises glueing preferably under heat and pressure a thin decorative thermosetting laminate (1) of postforming quality having an abrasion resistance measured according to EN 438-2/6:1991 as IP-value >3000 revolutions, preferably >6000 revolutions, on a longitudinal carrier

(2) which carrier has a rectangular cross-section and at least two opposite rounded-off edges, whereby the postforming laminate (1) in one piece is glued on the upper side and two long sides of the carrier (2) via the rounded-off edges, whereupon one or more floor profiles (3,4,5) having the same or different cross-section is (are) machined from the laminate coated carrier (2).

2. Process according to claim 1 wherein a water resistant carrier (2) is used.

3. Process according to claim 1 or 2, wherein the postforming laminate (1) consists of at least one monochromatic or patterned paper sheet impregnated with a thermosetting resin, preferably melamine-formaldehyde resin and preferably one or more sheets for instance consisting of parchment, vulcanized fibres or glass fibres which preferably are not impregnated with a thermosetting resin.

4. Process according to any one of claims 1-3, wherein the postforming laminate (1) includes at least one uppermost transparent paper sheet, so-called overlay of α-cellulose impregnated with a thermosetting resin, preferably melamine-formaldehyde resin.

5. Process according to any one of claims 1-4 wherein at least one of the paper sheets of the postforming laminate (1) being impregnated with thermosetting resin, preferably at least the uppermost sheet is coated with hard particles for example silica, aluminium oxide and/or silicon carbide with an average particle size of 1-80 µm, preferably about 5-60 µm evenly distributed over the surface of the paper sheet.

6. Process according to any one of claims 1-5, wherein the IP-value lies within the interval 3000-20000 revolutions, preferably 3000-10000 revolutions.

7. Process according to any one of claims 1-6 wherein the carrier (2) consists of a fibre board or a particle board.

Patentansprüche

1. Verfahren zur Herstellung einer Fußbodenleiste wie eines Verlängerungsprofils (3), eines Übergangsprofils (5) oder eines Abschlußprofils (4), welches das Kleben, vorzugsweise unter Wärme und Druck, eines dünnen aushärtbaren Zierlaminats (1) von Nachform-Qualität mit einer Verschleißfestigkeit, gemessen gemäß EN 438-2/6:1991 als IP-Wert, von >3.000 Umdrehungen, vorzugsweise >6.000 Umdrehungen, auf einen Längsträger (2) umfaßt, der einen rechtwinkligen Querschnitt und wenigstens zwei gegenüberliegende abgerundete Kanten besitzt, wodurch das Nachform-Laminat (1) in einem Stück auf die Oberseite und die zwei Längsseiten des Trägers (2) über die abgerundeten Kanten geklebt wird, worauf eine oder mehrere Fußbodenleisten (3, 4, 5) mit gleichem oder unterschiedlichem Querschnitt aus dem mit dem Laminat beschichteten Träger (2) maschinell gearbeitet werden.

2. Verfahren gemäß Anspruch 1, worin ein wasserbeständiger Träger (2) verwendet wird.

3. Verfahren gemäß Anspruch 1 oder 2, worin das Nachform-Laminat (1) aus wenigstens einem einfarbigen oder gemusterten Papierblatt, das mit einem aushärtbaren Harz getränkt ist, vorzugsweise Melamin-Formaldehyd-Harz, und vorzugsweise einem oder mehreren Blättern besteht, die zum Beispiel aus Pergament, Vulkanfiber oder Glasfasern bestehen, die vorzugsweise nicht mit einem aushärtbaren Harz getränkt sind.

4. Verfahren gemäß einem der Ansprüche 1 bis 3, worin das Nachform-Laminat (1) wenigstens ein oberstes transparentes Papierblatt einschließt, ein sogenanntes Overlay aus α-Cellulose, das mit einem aushärtbaren Harz getränkt ist, vorzugsweise Melamin-Formaldehyd-Harz.

5. Verfahren gemäß einem der Ansprüche 1 bis 4, worin wenigstens eines der Papierblätter des Nachform-Laminats (1), das mit aushärtbarem Harz getränkt ist, vorzugsweise wenigstens das oberste Blatt, mit harten Partikeln, zum Beispiel Silica, Aluminiumoxid und/oder Siliziumcarbid, mit einer durchschnittlichen Teilchengröße von 1-80 µm, vorzugsweise ca. 5-60 µm, beschichtet ist, die gleichmäßig über die Oberfläche des Papierblatts verteilt sind.

6. Verfahren gemäß einem der Ansprüche 1 bis 5, worin der IP-Wert im Bereich von 3.000-20.000 Umdrehungen, vorzugsweise 3.000-10.000 Umdrehungen, liegt.

7. Verfahren gemäß einem der Ansprüche 1 bis 6, worin der Träger (2) aus einer Faserplatte oder einer Spanplatte besteht.

Revendications

1. Procédé de fabrication d'une lame de revêtement de sol tel qu'un profil de dilatation (3), un profil de transition (5) ou un profil de terminaison (4), qui comprend le collage, de préférence sous une chaleur et une pression d'un mince stratifié thermodur-

cissable décoratif (1) de qualité pour post-formage présentant une résistance à l'abrasion mesurée conformément à la norme EN 438-2/6 : 1991 comme une valeur IP > 3000 tours, de préférence > 6000 tours, sur un support longitudinal (2), lequel support présente une section transversale rectangulaire et au moins deux bords arrondis opposés, d'où il résulte que le stratifié pour post-formage (1) est collé en une pièce sur la face supérieure et les deux faces allongées du support (2) par l'intermédiaire des bords arrondis, après quoi un ou plusieurs profils de revêtement de sol (3, 4, 5), présentant la même section transversale ou une section transversale différente, est ou sont'usinés à partir du support revêtu de stratifié (2).

2. Procédé selon la revendication 1, dans lequel un support résistant à l'eau (2) est utilisé.

3. Procédé selon la revendication 1 ou 2, dans lequel le stratifié pour post-formage (1) est constitué d'au moins une feuille de papier monochromatique ou à motifs imprégnée d'une résine thermodurcissable, de préférence de la résine de mélamine-formaldéhyde et de préférence une ou plusieurs feuilles constituées par exemple de parchemin, de fibres vulcanisées ou de fibres de verre qui ne sont de préférence pas imprégnées d'une résine thermodurcissable.

4. Procédé selon l'une quelconque des revendications 1 à 3, dans lequel le stratifié pour post-formage (1) comprend au moins une feuille de papier transparente la plus au-dessus, ce que l'on appelle un film de recouvrement de cellulose α imprégné d'une résine thermodurcissable, de préférence, de résine de mélamine-formaldéhyde.

5. Procédé selon l'une quelconque des revendications 1 à 4, dans lequel au moins l'une des feuilles de papier du stratifié pour post-formage (1) est imprégnée de résine thermodurcissable, de préférence au moins la feuille la plus au-dessus est revêtue de particules dures, par exemple de silice, d'oxyde d'aluminium et/ou de carbure de silicium avec une granulométrie moyenne de 1 à 80 µm, de préférence environ 5 à 60 µm réparties régulièrement sur la surface de la feuille de papier.

6. Procédé selon l'une quelconque des revendications 1 à 5, dans lequel la valeur IP est située dans l'intervalle de 3000 à 20000 tours, de préférence de 3000 à 10000 tours.

7. Procédé selon l'une quelconque des revendications 1 à 6, dans lequel le support (2) est constitué d'un panneau de fibres ou d'un panneau de particules.

Fig. 1

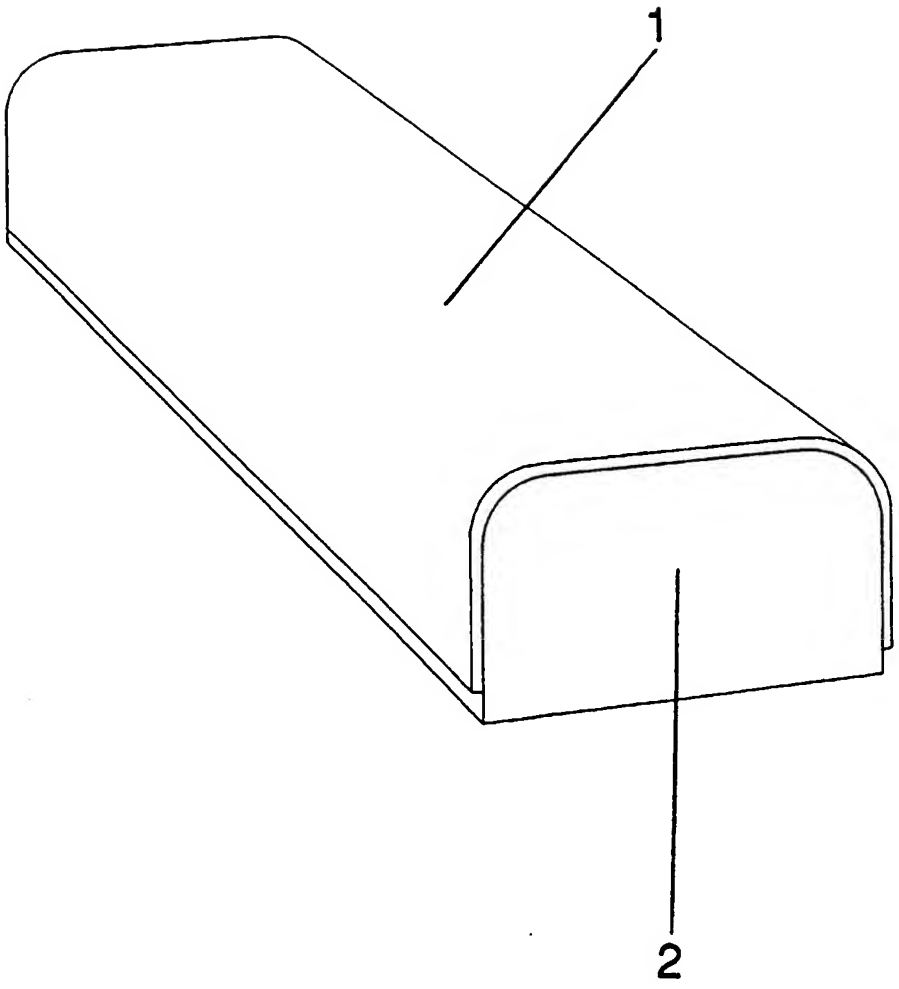

Fig. 2

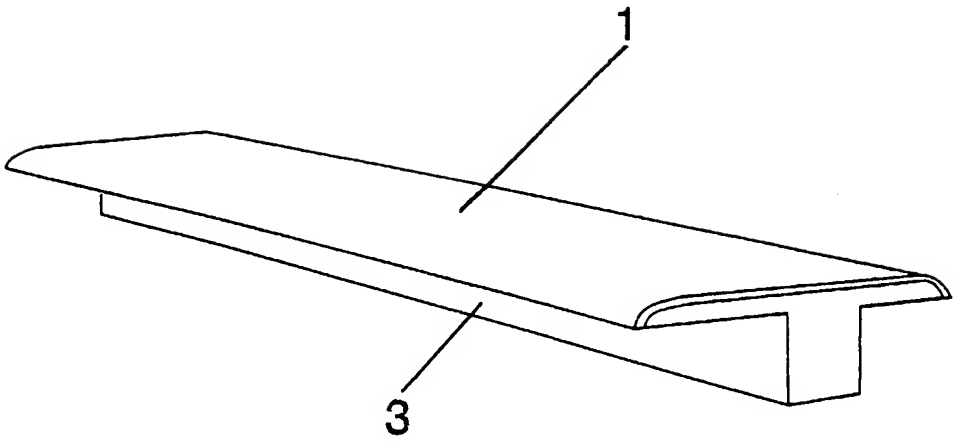

Fig. 3

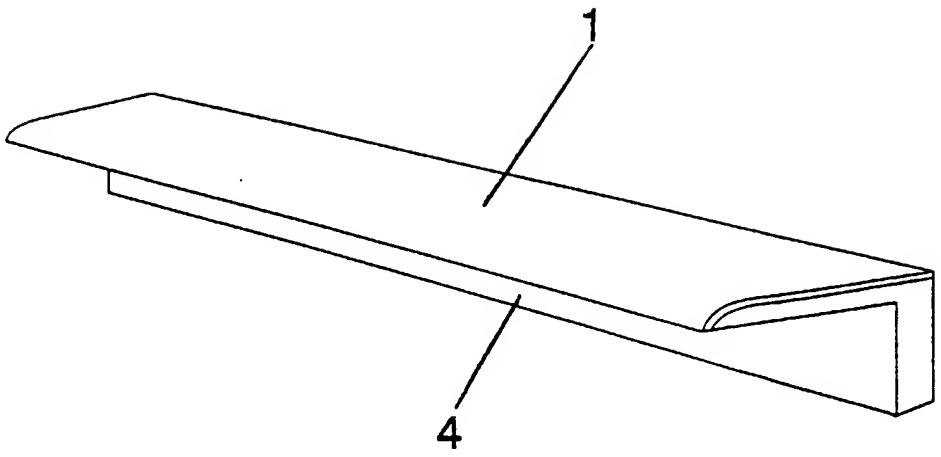

Fig. 4